Assessment of Child Dental Health Status As required by *Frew v. Suehs*

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Key Findings

- Third grade age children enrolled in Medicaid experience lower rates of untreated dental decay and decay
 requiring urgent care as compared to both: 1) allchildren not enrolled in Medicaid (low-income and
 children who do not receive free or reduced school lunch) and 2) low-income children who do receive free
 school lunch, but are not enrolled in Medicaid.
- Among three to five year-old children newly enrolled in Head Start, those children enrolled in Medicaid in
 both urban and rural areas experience lower rates of untreated dental decay, decay requiring urgent care,
 and decay potentially requiring treatment under general anesthesia as compared to children not enrolled
 in Medicaid.
- Among three to five year-old children newly enrolled in Head Start, those children enrolled in Medicaid in both urban and rural areas experience higher rates of dental care utilization, as measured by greater proportions who have ever seen a dentist, seen a dentist within the past year, and have a family dentist, as compared to children not enrolled in Medicaid.

Introduction

The *Frew v. Suehs* Health Outcome Measures and Dental Assessment corrective action order (CAO) requires that defendants conduct a valid dental study that assesses Frew class members' dental health, hereafter referred to as the dental assessment and mandates a corrective action plan following the assessment. Class members consist of children ages birth through 20 years enrolled in Texas Health Steps (THSteps), the Medicaid Early and Periodic Screening, Diagnosis, and Treatment (EPSDT) program in Texas. This report presents baseline results of child dental health status, obtained from the first dental assessment conducted in 2007-2008. The second dental assessment is currently scheduled for 2012-2013.

As shown above in the Key Findings, the dental health of the *Frew* class is better than non-class members. Accordingly, though the *Frew* court has ordered a corrective action plan following the assessment in its 2007 order, corrective action is not necessary or warranted given the findings of the assessment. To the extent the court still desires Defedants to prepare corrective action, though the data reveals it is neither necessary nor warranted, Defendants are prepared to follow the court's instructions.

Methodology

Basic Screening Survey

The oral health status of children enrolled in THSteps can be assessed by using the Basic Screening Survey (BSS) developed by the Association of State and Territorial Dental Directors (ASTDD) in collaboration with the Centers for Disease Control and Prevention's (CDC) Division of Oral Health. Through the use of calibrated examiners, the BSS uses direct visual observation of the mouth, which provides individualized screening results.

ASTDD developed the BSS in 1999, in response to the need for community level oral health data. The BSS consists of two parts: 1) questions about the person being screened, such as the length of time since last dental visit and the accessibility of dental care; and 2) the direct screening of individuals for caries and sealants. The measures used in the BSS are consistent with the National Oral Health Surveillance System (NOHSS), which allows comparisons with other states and with the nation and at a level consistent with

monitoring the national health objectives found in the United States Public Health Service's *Healthy People* 2010 document.

In addition to direct visual inspection of the mouth, the BSS also collects demographic information about the child being screened via a parent questionnaire, which also serves as the consent form (see Appendix A). BSS questions about the child being screened are self-reported by the parent/guardian and relate to basic sociodemographic data for each child, including:

- Age (years),
- Sex (male/female),
- Race/Ethnicity (White, Black, Hispanic, Other),
- Medicaid enrollment status (yes/no), and
- Participation in the federal free and reduced price school meal program.

The BSS collects demographic and oral health status data including the number and percent of children on Medicaid. This study design will provide useful benchmarks for the general third grade population to which THSteps clients can be compared.

Study Population

In an effort to assess the dental health status of children enrolled in THSteps, the Texas Department of State Health Services' (DSHS) Oral Health Program (OHP) administered the BSS among two separate age populations: preschool age children, three through five years of age, enrolled in Head Start and elementary school children in the third grade who are approximately eight through 10 years of age. As large proportions of children sampled are enrolled in THSteps (approximately 75 percent¹ of the preschool age Head Start sample and 34 percent² of the third grade sample), these data are useful for gaining a baseline picture of the oral health status of class members aged three through five years of age and eight through 10 years of age.

Table 1 presents the outcomes that were measured. Items one through three were measured in the third grade population and items 1 through 4 were measured in the Head Start population.

Table 1. Description of Dental health Outcome Measures

Indicator	Description	Variable values
1. Dental caries experience	Measures children who have ever had a cavity. Healthy People 2010 Objective 21-1	0 - no treated or untreated dental caries 1 - have treated and/or untreated dental caries
2. Untreated dental decay	Measures children who have active dental decay. Healthy People 2010 Objective 21-2	0 - no untreated dental caries 1 - at least one decayed tooth
3. Require urgent dental care	Measures children who have pain, infection, or bleeding.	0 – no or early treatment required 1 – urgent treatment required
4. Require dental therapy under general anesthesia	Measures children with severe decay that may require hospitalization or outpatient treatment under general anesthesia.	0 – no general anesthesia required 1 – general anesthesia may be required

The fourth data element was measured by the development of an algorithm based on the following data elements: child's age, level of untreated decay (measured by the number of sextants with untreated decay), child's response to the examination process, and presence of a co-morbid condition or special health care need, as reported by the parent, that may potentially require general anesthesia in order to provide needed dental care. Children were included in the category of "requiring dental care that may potentially include

 $^{^{1}}$ Head Start Program Information Report for the 2006-2007 Program Year. Obtained from the Texas Head Start State Collaboration Office, Houston, TX.

² Data from the 2004-2006 BSS among elementary school children in Texas.

either inpatient hospitalization or outpatient treatment under general anesthesia" based on scores derived when the 22 point "Criteria for Dental Therapy Under General Anesthesia" metric from the 2009 Texas Medicaid Provider Procedures Manual was applied.

Study Design - Third Grade BSS

DSHS conducted a school-based BSS among a statewide representative sample of 3,864 third grade students during school year (SY) 2007-2008. This sample of children was selected to be representative of all 340,318 Texas third graders, which is the group to which the results are expected to generalize. Prevalence estimates of selected dental health outcomes among this population have already been reported to the NOHSS. Approximately 28 percent of the third grade public school population was estimated, based on parent self-report, to be enrolled in Medicaid. Since DSHS previously determined that a sample size of 1,064 is adequate to reliably estimate class members' dental health status with a 95 percent confidence interval (CI) of \pm 3 percentage points, there is adequate sample size to estimate oral health status among the sub-population of class members.

The study design was a stratified systematic cluster sampling. A list of all elementary schools, current as of 2003, was obtained from the Texas Education Agency (TEA). This TEA list of elementary schools was used to determine the number of elementary schools with a third grade ("third grade schools") and the corresponding number of third grade students. The list of third grade schools constituted the sampling frame.

Schools were initially stratified into two groups: 1) those in the border region of Texas and 2) those not in the border region. The border region was defined based on the La Paz agreement of 1986 as the 32 counties within 100 kilometers or approximately 60 miles from the border with Mexico.³ The non-border schools were then further stratified into three groups based on population size: Metropolitan/Urban, Suburban, and Rural, for a total of four strata: border, non-border metropolitan, non-border suburban, and non-border rural.

Stratum-specific estimates for the average number of third grade students per school and estimated response rates were taken into account to determine the number of schools to be sampled within each stratum. Within each stratum, schools were randomized and chosen systematically. The first school was selected using a random number between one and the sampling interval and then every Nth school (N is the sampling interval) was systematically selected. The sampling interval was equal to the total number of schools per stratum divided by the number of schools to be sampled.

All third grade students with parental consent and present at a selected school on the day of the survey were screened. Table 2 presents a description of the third grade BSS sample.

³ http://www.dshs.state.tx.us/borderhealth/border_health_map.shtm

Table 2. Description of Third Grade BSS, SY2007-2008

	Strata				
	Border	Metropolitan	Suburban	Rural	Texas
Population data					
Number of third grade students	44,752	262,267	17,501	15,798	340,318
Stratum-specific proportion of students	13%	77%	5%	5%	100%
Number of third grade schools	500	2,888	302	337	3,990
Number of eligible third grade schools	444	1918	128	85	2575
Average # third grade students/school	90	86	117	49	85
Sample data					
Sample size (# of third grade students)	1,044	1,309	825	686	3,864
Stratum-specific proportion of students	27%	34%	21%	18%	100%
Number of third grade schools	18	25	14	13	71

Study Design - Head Start BSS

Head Start is a comprehensive child development program that serves preschool age children three through five years of age. The overall goal of the program is to increase the school readiness of children from low-income families. Head Start program data shows that almost 75 percent of the Head Start child population is enrolled in Medicaid. As such, assessment of the dental health of Head Start preschoolers can serve as a proxy for the dental health of the low-income, Medicaid beneficiary three through five year-old population.

Study design was stratified cluster sampling. The *Head Start Program Information Report for the 2006-2007 Program Year*, which was the most current Head Start Program Directory at the time of survey design, and a listing of all Head Start sites in Texas⁴ were used to establish a sampling frame. Sampling occurred within two strata, urban and rural.

All Head Start programs that had a center-based component (in addition to or in lieu of a home-based component) were included in the sampling frame. Head Start sites that were only home-based were excluded from the sampling frame. The one migrant Head Start program and the one Head Start program serving the Alabama-Coushatta tribe were also excluded from the sampling frame due to the uniqueness of these sites and the limited population enrolled. Head Start programs operated by delegate agencies as part of their preschool/early childhood offerings were included in the sampling frame. Therefore, "mixed" preschool program sites with two Head Start classrooms and four non-Head Start classrooms, for example, were also included in the sampling frame.

For the urban sample, Head Start program grantees in each of the five major metropolitan areas in Texas (Austin, Dallas, El Paso, Houston, and San Antonio) were contacted to obtain a list of all Head Start centers in their area. In addition, in some cases, where the Head Start program grantee sub-contracts with one or more delegate agencies, individual delegate agencies were also contacted to obtain a list of all sites where Head Start classes are offered. For the rural sample, each of the 34 Head Start program grantees located in rural areas was contacted to obtain a list of Head Start centers. Based on the US Census Bureau's designation, rural areas were defined as towns with a population of less than 10,000. Head Start sites with the largest number of students were selected within urban and rural strata, respectively. Ten Head Start sites comprised the final sample. One site from each of the major metropolitan areas, as well as five sites representing the rural areas of Texas, comprised the final Head Start BSS sample.

⁴ http://www.acf.hhs.gov

Results

Third Grade BSS

There were 3,864 children seven through eleven years of age surveyed in this statewide, representative sample. Results of this survey show that approximately 28 percent of third graders in Texas are reported to be enrolled in Medicaid. Table 3 below presents demographic characteristics of third grade children in Texas, stratified by Medicaid status.

Table 3. Demographic Characteristics of Third Grade Sample

	Weighted Mean/Weighted Proportion					
Demographic characteristic	Medicaid (n=1,214)	Non-Medicaid (n=2583)	Total sample (n=3,864)	Chi square test/t-test p value		
Mean age (years)	8.53	8.46	8.48	0.04		
Sex						
Male	43%	48%	46%	0.13		
Female	57%	52%	54%			
Race				0.0003		
White	15%	27%	24%			
Black	15%	7%	10%			
Hispanic	65%	59%	60%			
Other	5%	7%	6%			

Table 4 below presents prevalence estimates of selected oral health outcomes among third grade school children in Texas. As shown in Table 4, a higher proportion of children enrolled in Medicaid had ever had a cavity; however, a lower proportion of Medicaid children had an untreated cavity. In addition, lower proportions of children enrolled in Medicaid had untreated dental decay requiring urgent care as compared to those children not enrolled in Medicaid. These results are statistically significantly different.

Table 4: Prevalence of Selected Dental Health Outcomes among Third Grade School Children in Texas, 2007-2008

	Weigh		
	Medicaid	Non-Medicaid	Chi square test
Dental Health Outcomes	(n=1,214)	(n=2,583)	p value
Dental caries experience	77%	72%	0.03
Untreated dental decay	35%	45%	0.008
Requires urgent dental care	6%	10%	0.03

In order to control for socio-economic status (SES), Table 5 analyses are restricted to the subgroup of children reported to receive free school lunch. Receipt of free school lunch is a proxy for the poorest group, as families of these children must earn less than or equal to 130 percent of the Federal Poverty Level in order to qualify for free lunch.

Results presented in Table 5 below show that once controlling for SES, there is no longer any statistically significant difference in the prevalence of ever having had a cavity between the Medicaid and non-Medicaid group. However, once SES is controlled for, the data show an even greater disparity in the prevalence of untreated dental decay, especially untreated decay requiring urgent care, between the Medicaid and non-Medicaid groups. Less than half of the proportion of children enrolled in Medicaid require urgent dental care as compared to children not enrolled in Medicaid.

Table 5: Prevalence of Selected Dental Health Outcomes among the Subgroup of Third Grade School Children Receiving Free School Lunch, 2007-2008

	Weighted P		
	Medicaid*	Non-Medicaid Free Lunch	Chi square test p value
Dental Health Outcomes	(n=1,214)	(n=1,409)	F
Dental caries experience	77%	79%	0.35
Untreated dental decay	35%	52%	0.0001
Requires urgent dental care	6%	13%	0.0001

^{*}Note: All students receiving Medicaid also receive free lunch.

Head Start BSS

There were 2,227 children three through five years of age surveyed in this sample, representative of urban and rural Head Starts sites. All analyses were restricted to only those children who were newly enrolled in Head Start, as reported by Head Start health coordinators and other Head Start staff. Therefore, a total of 1,420 children constituted the final analytical sample. The majority of these 1,420 children (97 percent) were between three and four years of age. Results of this survey show that approximately three-quarters (75 percent) of the 1,358 children newly enrolled in Head Start, for whom Medicaid status was known, were enrolled in Medicaid. These data are consistent with information in the *Head Start Information Report for the 2006-2007 Program Year*, which reports that approximately 75 percent of Head Start children are enrolled in Medicaid.

Tables 6 and 7 below present demographic characteristics of the children three to five years of age who were newly enrolled in Head Start, stratified by Urban/Rural county status and Medicaid status.

Table 6: Demographic Characteristics of Children
Three to Five Years of Age Newly Enrolled in Head Start—Urban Sample

		Mean/Proportion		_
Demographic	Medicaid	Non-Medicaid	Total urban sample	Chi square/t-test
characteristic	(n=524)	(n=161)	(n=737*)	test p value
Mean age (years)	3.4	3.5	3.4	0.77
Sex				0.36
Male	54%	50%	53%	
Female	46%	50%	47%	
Race				0.26
White	4%	1%	3%	
Black	19%	20%	19%	
Hispanic	76%	75%	76%	
Other	2%	3%	2%	

^{*} Sum of Medicaid and non-Medicaid does not add to the total urban sample due to missing data on the Medicaid variable for 52 children.

Table 7: Demographic Characteristics of Children

Three to Five Years of Age Newly Enrolled in Head Start—Rural Sample

		Mean /Proportion	on	
Demographic characteristic	Medicaid (n=500)	Non-Medicaid (n=173)	Total rural sample (n=683*)	Chi square test p value
Mean age (years)	3.3	3.4	3.4	0.29
Sex				0.76
Male	48%	49%	48%	
Female	52%	51%	52%	
Race				0.003
White	13%	6%	11%	
Black	25%	17%	23%	
Hispanic	60%	76%	64%	
Other	1%	1%	1%	

^{*} Sum of Medicaid and non-Medicaid does not add to the total urban sample due to missing data on the Medicaid variable for 10 children.

Tables 8 and 9 below present the dental health status of the surveyed three to five year-old children newly enrolled in Head Start, stratified by Urban/Rural and Medicaid status.

Table 8: Prevalence of Selected Dental Outcomes among Children
Three to Five Years of Age Newly Enrolled in Head Start in Urban Areas

		Proportion		
	Medicaid	Non-Medicaid	Total urban	Chi square test
	(n=524)	(n=161)	sample	p value
Dental Health Outcomes			(n=737*)	
Dental caries experience	36%	36%	36%	0.94
Untreated dental decay	14%	27%	17%	< 0.0001
Requires urgent dental care	2%	6%	3%	0.002
Requires dental treatment	0.6%	2%	1%	0.04
under general anesthesia				
Access and Utilization of Dental	Care			
Ever seen a dentist	95%	74%	90%	< 0.0001
Seen a dentist within past year	91%	68%	86%	< 0.0001
Have a family dentist	67%	25%	57%	< 0.0001

^{*} Sum of Medicaid and non-Medicaid does not add total urban sample due to missing data on the Medicaid variable for 52 children.

Table 9: Prevalence of Selected Dental Outcomes among Children Three to Five Years of Age Newly Enrolled in Head Start in Rural Areas

	•	Proportion		
	Medicaid	Non-Medicaid	Total rural	Chi square test
	(n=500)	(n=173)	sample	p value
Dental Health Outcomes			(n=683*)	
Dental caries experience	41%	43%	45%	0.70
Untreated dental decay	26%	39%	30%	0.002
Requires urgent dental care	5%	6%	5%	0.50
Requires dental treatment	2%	3%	2%	0.28
under general anesthesia				
Access and Utilization of Dental (Care			
Ever seen a dentist	87%	74%	83%	< 0.0001
Seen a dentist within past year	82%	65%	77%	< 0.0001
Have a family dentist	60%	47%	57%	0.008

^{*} Sum of Medicaid and non-Medicaid does not add total urban sample due to missing data on the Medicaid variable for 10 children.

Conclusions

Among third grade children, Medicaid enrolled children had better dental outcomes than both children not enrolled in Medicaid and children who received free school lunch, but are not in Medicaid. Compared to children who received free school lunch, but are not enrolled in Medicaid, the rate of untreated dental decay was 48.5% greater compared to children enrolled in Medicaid and the proportion requiring urgent care among children enrolled in Medicaid was half that of the children who received free school lunch, but are not enrolled in Medicaid. While the proportion of children with negative dental outcomes should be reduced among all groups, these data indicate that children enrolled in Medicaid have better outcomes than most other children.

Children between the ages of three and five years who are enrolled in Medicaid had equal, if not better, dental outcomes and experienced higher rates of dental care utilization compared to low-income Head Start children not enrolled in Medicaid. Differences in dental outcomes were more readily seen in the urban sample. In the rural sample, children enrolled in Medicaid had 50% less untreated dental decay compared to children not enrolled in Medicaid; however, no other differences between these groups were identified. Differences in dental care utilization favored children enrolled in Medicaid regardless of geographic location compared to children not enrolled in Medicaid. Among children enrolled in Medicaid, dental care utilization rates were better in urban than in rural areas. While improvements in these indicators are needed among all groups, children ages three to five years who are enrolled in Medicaid fared better than low-income Head Start children ages three to five years who were not enrolled in Medicaid. Differences between these groups were more pronounced in urban rather than rural areas.

In conclusion, the Dental Assessment reveals that corrective action is neither necessary or warranted, though Defendants will abide by the court's 2007 order regarding corrective action, if the court still so desires the development of a corrective action plan.

Appendix A



TEXAS HEAD START BASIC SCREENING SURVEY PARENTAL PERMISSION FORM & QUESTIONNAIRE

Dear Parent/Guardian:		enter/Site Name:_			
Please complete this form and re	turn it to your child's teacher ton	norrow.			
On, a region Services, will be at your child's Screening Survey. The dental completed parental permissio stating his/her dental condition.	screening and fluoride varnish	screening and pro application will	ovide fluoride va be FREE to H	arnish as part of the Tead Start children v	Гехаѕ Basic v ho have a
Fluoride varnish is a protective that have already started. More i varnish, DSHS will provide this statement for informed permissi dental screening does not tak dentist for on-going dental chemist f	nformation can be found on the preventive dental service free of con if you wish your child to part the place of regular dental	attached informat charge. Please read rticipate in the der	tion sheet. If you and complete that antal screening an	or child is a candidate the information below a and fluoride varnish pro	for fluoride and sign the ogram. The
Child's Name (please print)		Age	_ Date of Birth		
Address	1 /)				
Telephone number with area coo Parent/Guardian Name (please p					
Please answer the next questi	,		 nealth history	Vour answers will re	emain
Please circle your answers to one Sex of your child: Male For Is your child enrolled #	emale Child's Race/Ethnicity	y: White Black	k Hispanic No	Other Medicaid	Card
1. Is your child under the care o	 f a doctor?		Ye	es No	
If yes, for what reason					
2. Is your child currently taking	any medicine? Yes No				
If yes, what is the name/type	of medicine?				
3. Does your child have any aller If yes, please list				No	
4. Does your child have any seri-				No	
If yes, please explain					
5. Has your child been seen by a				No	
6. If child has been seen by a der					
7. Do you have a family dentist?				No	
8. Please check which of the foll				HIVE /AIDC	
	is \Box 7. epilepsy/seizures \Box 1 5. diabetes \Box 8. fainting				
	ough 9. bleeding disorders	□ 11. high blood	i pressure 🗆 13. ti	uberculosis	
9. Does your child have <u>any</u> of t					
Autism or Autism Spectrum Di problems, anemia/sickle cell dise 10. Does your child get any of the physical therapy; occupational t	ase, Cystic Fibrosis, Cerebral Pal ne following: Yes No	sy, Muscular Dyst	rophy, Attention	Deficit Disorder (AD	D)
problem	ricrapy, specen dicrapy, deading	ent of counseling	101 any develo	pinentai, emotionai, (71 Dellaviol

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	hereby give permission for my child [print name] to arnish as part of the Texas Basic Screening Survey. I understand that my permission is
If you do not want your child to receive fluor	ride varnish application, then please check here
Parent/Guardian Signature	Date
1 ,,	sk for and know the information the State of Texas has about you. You can ask for it at ght. You have the right to ask the state agency to correct anything that is wrong. 121, 552.023, 559.003 and 559.004).



INFORMED CONSENT FOR PARENTS AND LEGAL GUARDIANS OF PARTICIPANTS IN TEXAS BASIC SCREENING SURVEY

Dear Parent/Guardian:		
Please complete this form and return it to your child's teacher tor	norrow.	
On, the Texas Department of State Health Sconduct a dental screening as part of the Texas Basic Screening Signed Informed Consent. After the screening, a written reportant condition. The screening does not take the place of regular dental	Survey. The screening w ort will be issued for your	ill be FREE, but students must have a
Student's Name (please print)	Age	Date of Birth
Address		
Telephone number with area code ()		
Parent/Guardian Name (please print)		
private and will not be shared. If you do not want to ansy child to have his or her teeth checked.	ver the questions, you n	nay still give permission for your
Please circle your answer:		
What is the sex of your child? M		
Is your child enrolled in Medicaid? Yes No		
Is your child enrolled in CHIP? Yes No		
Is your child on free lunch? Yes No		
Is your child on reduced lunch? Yes No		W
Child's Ethnicity: White Black Hispanic Asian Native An	nerican Pacific Islander	Multiracial Other Unknown
Please circle your answer: 1. Is your child under the care of a physician?		-Yes No
		- les ino
If yes, for what reason		Yes No
If yes, what medicine is being taken?		
3. Does your child have other allergies, such as to red dye or late:		
If yes, please list.		
4. Does your child have any serious illnesses?		Yes No
TC 1		
5. Has your child been treated by a dentist before?		-Yes No
6. Do you have a family dentist? Dentist's name		
7. Check any of the following which apply to your child:		
\Box 1. heart disease \Box 4. asthma \Box 7. epilepsy/seizures		e 🗆 13. cough
□ 2. heart murmur □ 5. hepatitis □ 8. diabetes	\square 11. bleeding disorders	
\square 3. rheumatic fever \square 6. jaundice \square 9. sinus trouble	☐ 12. respiratory problem	ns \Box 15. HIV+/AIDS
\Box 1	6. tuberculosis	

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INFORMED CONSENT STATEMENT

I, [print name]	hereby give permission for my child to participate in the Texas Basic Screening Survey
I understand that my child will be receiv	ing a dental screening at no charge and that a personal, informed consent is required before
my child can participate. Also, since I ar	n not accompanying my child to the screening, I authorize the school nurse or an appropriat
school representative as the accompanyi	ng adult for this activity.
Parent/Guardian Signature	Date
PRIVACY NOTIFICATION: With few exceptions, you have the right to request and be informed about information that the State of Texas collects about you. You are entitled to receive and review the information upon request. You also have the right to ask the state agency to correct any information that is determined to be incorrect. See http://www.dshs.state.tx.us for more information on Privacy Notification (Reference: Government Code, Section 552.021, 552.023, 559.003 and 559.004). (Revised 09/21/07)	